

insurance plans. That this time has been well spent is attested by the fact that more than 70 per cent of the American public today has some coverage for hospital, medical and surgical bills.

Today, with the approach made obliquely and not frontally, and with only one segment of the people involved—and that segment a sentimental favorite—there is grave question as to whether additional time may be secured for private enterprise to do the preliminary studies necessary before it can enter a field in which no one has experience and costs are unknown.

If the supposition may be made that Congress will, in the next two years, seriously consider legislation extending federal assistance to the older-age group in meeting their medical and hospital bills, the medical profession will be faced with making a decision as to its own stand.

Should such legislation be opposed frontally and with finality? Should medicine exert all its efforts to the defeat of such a proposal, in the knowledge that if its fight fails it may be confronted with something even worse than it had imagined?

As another alternative, should medicine just ignore the legislative threat and supinely accept whatever comes out of Congress?

Or, should medicine get into the picture and attempt to guide the content and the progress of this

type of legislation, in the belief that a better end product might result? Should the old adage of joining those whom you can't defeat be applied?

These questions are being asked of physicians by physicians today. There are advocates of each of the three routes suggested above. There are also opponents of each.

Obviously, these questions are due to be thrashed out in the A.M.A., in the state and territorial medical associations and in the county medical societies in the next twelve months—if, indeed, there is that much time left for reaching decisions.

The California Medical Association already has these questions in mind and has taken some preliminary steps to try to reach an answer which will, at one time, meet the government-labor-public demand for care for old people and establish a system under which physicians may practice their profession with at least a close approximation to the methods for which they were trained and to which they have become accustomed.

There is no comfort in facing a situation where the profession must come up with an adequate answer of its own in order to stave off something that government might dream up which would be incalculably worse. Yet, it seems incumbent on the medical profession today to bring out an answer to a problem.

## Letters to the Editor . . .

### Heart Disease in Transport Workers

Editor, CALIFORNIA MEDICINE:

Several friends have written us about the exceedingly interesting article by Dr. Rosenman and Dr. Friedman in your issue of September 1958 [The Possible Relationship of Occupational Stress to Clinical Coronary Heart Disease, page 169] in which they retabulated data in our paper dealing with the coronary experience of London transport workers.<sup>1</sup> In this paper it was shown that the drivers of London's buses suffered more coronary heart disease than bus conductors, and the drivers of the trams and trolleys more than *their* conductors. All these vehicles are double-deckers. Doctors Rosenman and Friedman have now shown that the conductors of the buses had a higher incidence of coronary heart disease than the drivers of the trams and trolleys, 2.0 per 1,000 compared with 1.72. This is quite correct, though allowance should of course be made for the differences in the age composition of the two groups of men. We have been back to the original data and the position is

that under 50 years of age the tram and trolley drivers had more of all forms of the disease than the bus conductors, and at all ages they had a higher incidence of "sudden death," of not so rapidly fatal infarction, and of nonfatal infarction. But there was a gross excess of angina among the bus conductors at ages over 50, enough to produce an overall higher rate of the disease in them compared with the tram and trolley drivers. These figures all refer to the two years 1949-50 and they are rather small. We have now accumulated a few months short of 10 years' data (as well as much information on blood pressure, blood lipids, somatotype, etc.) and hope to publish further results in due course. Meanwhile it can be said that certain patterns seem to be established. The striking driver-conductor difference is in the most malignant form of coronary heart disease, "sudden death" as the first clinical manifestation under 50 years of age. This is running four times higher in the drivers than in the conductors; and the picture seems to be about the same in each group of drivers compared with either group of conductors. Other forms of the clinical disease have other rela-

tions to the men's work—an example of the identification of syndromes by epidemiological methods.<sup>2</sup> Several studies that have been carried out here show more, and more general, advantage to the physically active; and it may well be that there are special factors in the case of bus conductors. We cannot remember whether we did the particular "cross" that Doctors Rosenman and Friedman make, but do recollect that our main anxiety was to compare groups that were as like as possible to each other, differing only in their actual job. Hence our emphasis on the comparison of bus drivers with bus conductors and tram and trolley drivers with tram and trolley conductors.

Be all this as it may be we cannot see its connection with the hypothesis about the role of occupational and other social strains in the production of clinical coronary heart disease. To describe the buses as "downtown" and the trams and trolleys as "suburban" is quite wrong for London. The trams and trolleys did not serve Piccadilly and the Strand in 1949-50 though they came pretty close; but they did (and do) traverse most densely populated and built-up urban, and industrial areas with only too much of congestion, traffic jams, rush hours and the rest of it—if these are the strains Doctors Rosenman and Friedman are thinking of. London is a region and not an ordinary city. In fact the buses covered (and cover) more "suburban" areas in the usual connotation of that term than the trams and trolleys.

The hypothesis about nervous strain is today a highly important one and epidemiologists are very conscious that they have so far been able to make little contribution to its testing. It is not for lack of interest. Our paper which has already been quoted<sup>1</sup> showed that government office clerks, middle-grade executive officers in the Civil Service, and telephonists (with much night work), three groups of men with very different occupational strains, all had very similar experiences of coronary heart disease, and similar also to that of the bus drivers. Schoolmasters had no more than the men who serve behind the counters in post offices. The coronary experience of postmen (ours walk and cycle a lot) and of bus conductors was remarkably alike. It was observations like these that turned our minds to habitual physical activity, and its absence, as a possible common factor. The national necropsy survey of middle-aged men recently carried out in this country showed that ischaemic myocardial fibrosis in deaths from injuries, infections and cancers was as common in part-skilled light workers as in skilled, as common in these as in professional and business men,<sup>1</sup> and commoner in all of these than in active and heavy workers.<sup>3</sup>

The latest report on coronary heart disease published by our national office of vital statistics<sup>4</sup> showed that mortality ranged from 207 in radio and telegraph operators to 55 for agricultural workers. The occupations in the table had the worst records. The ratio for all men is 100 and only the most reliably based figures are quoted. These are mostly sedentary and "light" occupations in terms of physical activity, some with and some without obvious social and emotional strains.

*Mortality from Coronary Heart Disease, Males Aged 20 to 64, Inclusive, England and Wales, 1949-53*

	Standardised Mortality Ratio
Radio and telegraph operators .....	207
Roman Catholic priests and monks .....	193
Dock and harbour officials, etc.....	175
Chemists .....	169
Physicians .....	159
Commercial brokers, agents, etc. ....	156
Clergymen (Church of England) .....	153
Musicians .....	151
Managers and directors in communications (mainly post office) .....	149
Garment workers .....	149
Telephone operators .....	144
All men .....	100

The radio and telegraph operators ("other directed"?) are a very interesting group. Is this the archetypal modern man—on a high standard of living, sedentary, required to be at a chronic low alertness which is punctuated with spasms of nervous activity? There are no data on his smoking habits but they would be worth getting. The telephonists may be in the same category. The chemists, too, have characteristically twentieth century jobs and are probably an upwardly very mobile group (first appearance of the Lucky Jims?). But there is not much sign in this table of tycoons great and small, organization men, high or low pressure executives and vice-presidents. Business managers showed a ratio of 112 and company secretaries, 115; office clerical workers, however, 132. Bureaucrats did rather well with the top civil servants, ratio of 94—parkinsonism evidently is life-saving. The only "blue collar" group, the garment workers, is a very mixed one; and in general there is a striking absence of obvious labor victims of alienation—or automation. Foremen, the marginal men, ratio 99. These figures do not seem to take us very much further.

It is a pity that Dr. Breslow and Mr. Buechley were so brief and tantalising in their discussion of the probability that there are multiple important causes of coronary heart disease (same issue of your journal, page 175). European studies show an association between coronary heart disease and physical activity of work; several studies in the U.S.A. show none. Are different combinations of causes effective in the U.S.A. and in Europe? And are these related to the dreadfully high rate of coronary heart disease that is reported in the U.S.A. compared with

Europe and, in particular, with Scandinavia?<sup>2</sup> This could well be so. The investigation of occupational and other nervous strains may be illuminating, and it makes good sense that these should be sought first in the U.S.A. which is at a more advanced stage of technological development than Europe. Meanwhile, the first thing we would like to know is the comparative frequency of coronary atherosclerosis in these various populations. The findings on the American soldiers in Korea came as a shock to us here but we have no data yet on the prevalence of this condition in young Englishmen, soldiers or others.

The statement of Doctors Rosenman and Friedman that there was a sharp rise of myocardial infarction among British general practitioners<sup>5</sup> because they were "suddenly compelled by the then new system of medical practice to treat a remarkable number of patients" is without foundation. The National Health Service began in July 1948 and the increase of coronary heart disease among the general practitioners was substantial in 1947. Moreover, the increase in the volume of their work due to the new service was quite modest—about 10 per cent. In detail, comparing the figures for July 1946 to June 1948 with those of July 1948 to June 1950, the increase was 11 per cent and confined to office consultations; but there was also some increase in the number of general practitioners during this period. Interested readers should refer to<sup>6,7,8</sup>. Why the general practitioners and not the specialists suffered a sudden increase of coronary heart disease

in 1947-50 is still quite unclear. None of the possible explanations that have been suggested has helped. At present one of our colleagues is making a study of the mortality of doctors in the National Health Service in relation to the nature of their work; and a special study of the general practitioners in relation to volume of work, partnership *versus* single-handed practice, town *versus* country practice, and so on. Results should be available in a few years.

Yours sincerely,

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Editor, CALIFORNIA MEDICINE:

We have been privileged to comment upon the letter of Dr. Morris and Dr. Raffle. We are glad that they have confirmed our observation that their data, as originally published, indicated that the entire group of conductors of the buses had a higher incidence of *clinical* coronary heart disease than did the tram and trolley drivers. It is interesting that the authors, on reviewing their data, now find that if only drivers and conductors under 50 years of age are tabulated, apparently there are more instances of clinical coronary disease among the tram and trolley drivers than among the bus conductors. However, since no statistical data are presented in their letter, the latter difference in incidence may not be significant enough to justify any conclusion about its possible mechanism. Furthermore, it does not explain why both the conductors and the drivers of one particular route (which without question traverses the most heavily congested areas of London)

have so much higher an incidence of clinical coronary disease than do comparable men working in other more peripheral routes. Certainly the conductors and drivers of buses in such congested areas have as much or more physical exercise as do those working in similar vehicles in other areas.

The difference in the incidence of myocardial infarction in the two groups is interesting but fails to indicate necessarily either the degree or the incidence of the coronary atherosclerosis substrate in the two groups. Thus, infarction may be only a fortuitous complication due either to coronary thrombosis or the absence of sufficient collateral circulation rather than a valid index of the presence or severity of underlying coronary atherosclerosis. Such determinants of infarction of course may be separate from and influenced by factors entirely or partly different from those leading to the substrate, coronary atherosclerosis. Conceivably exercise could influence such determinants, but emotional stress,